(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau



(43) International Publication Date 11 March 2004 (11.03.2004)

PCT

(10) International Publication Number WO 2004/021405 A2

(51) International Patent Classification7:

H01L

(21) International Application Number:

PCT/US2003/027341

(22) International Filing Date: 28 August 2003 (28.08.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/406,905

US 28 August 2002 (28.08.2002)

(71) Applicant (for all designated States except US): TOKYO ELECTRON LIMITED [JP/JP]; TBS Broadcast Center, 3-6 Akasaka 5-Chrome, Minato-Ku, JAPAN, Tokyo (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): LI, Kun [US/US]; 622 Clauser Drive, Milpitas, CA 95035 (US). ERICK-SON, Mark, A. [US/US]; 421 35th Street, Sacramento, CA 95816 (US). KANELLAKOPOULOS, Ioannis [GR/US]; 10152 Firwood Drive, Cupertino, CA 95014 (US).

(74) Agent: DUTTA, Sanjeet, K.; 12400 Wilshire Boulevard, Seventh Floor, Los Angeles, CA 90025-1030 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

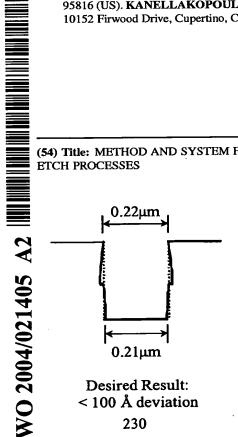
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND SYSTEM FOR DYNAMIC MODELING AND RECIPE OPTIMIZATION OF SEMICONDUCTOR **ETCH PROCESSES**



Desired Result: < 100 Å deviation 230

(57) Abstract: A method and system are disclosed for creating dynamic models of etch processes in semiconductor manufacturing. In one embodiment, a method comprises modeling an etch process used in semiconductor manufacturing to generate a dynamic process model. The dynamic process model is used to determine input values that result in a desired output value. A process recipe is optimized for the etch process with the input values.